

1   **What is claimed is:**

2           1.    A projection display device having an optical  
3   system, the optical system comprising:

4           a light source for emitting lights along a first  
5           direction to define an optical axis; and

6           a light pipe, non-coaxially disposed with the  
7           optical axis, receiving the lights from the  
8           light source and transmitting lights with a  
9           virtual arc array,

10          wherein the light pipe deviates from the optical  
11          axis by a predetermined distance in a second  
12          direction perpendicular to the first direction,  
13          so that the lights with the virtual arc array  
14          is asymmetrical.

1           2.    The device as claimed in claim 1, wherein the  
2   predetermined distance is substantially between 0.3 and  
3   0.7mm.

1           3.    The device as claimed in claim 1, further  
2   comprising a convergent lens, positioned between the  
3   light source and the light pipe, to focus the lights from  
4   the light source to the light pipe.

1           4.    The device as claimed in claim 3, wherein the  
2   light pipe comprises a lens module for receiving focused  
3   lights transmitted from the convergent lens, and  
4   outputting the focused lights uniformly.

1           5.    The device as claimed in claim 1, further  
2   comprising a relay lens module and a projection plane,

3 wherein the relay lens module relays the lights from the  
4 light pipe to the projection plane.

1       6. The device as claimed in claim 5, wherein the  
2 relay lens module comprises a spherical lens and an  
3 aspherical lens.

1       7. The device as claimed in claim 1, wherein the  
2 projection display device is a DLP (digital light  
3 processing) projector.

1       8. The device as claimed in claim 1, wherein the  
2 first direction is parallel to an axis on a XY-plane, and  
3 the second direction corresponds to a Z-axis.

1       9. The device as claimed in claim 1, wherein the  
2 light pipe deviates oppositely from the light source.